

REMARKS

Claims 1, 3 – 12, 14, and 16 – 33 are currently pending. Claims 1, 12, and 21 are the pending independent claims.

The current office action dated June 20, 2007, was originally issued by the Examiner as a Final Office Action. Applicants asked the Examiner to rescind the finality of the action in a Request to Withdraw Finality of Rejections filed on September 5, 2007. It is noted with appreciation that the Examiner thereafter informed Applicants by way of a voicemail message on September 9, 2007, that he was withdrawing the finality of the rejections in the June 20, 2007, Office Action. Accordingly, Applicants are responding as if the Office Action is non-final, and have made several amendments to the claims in an effort to clarify the claims and make them read better. However, no claim is amended in a strategic manner in order to distinguish over any art. It is believed the claims as previously submitted more than patentably distinguish over the art of record.

In the Office Action, the Examiner first indicated that Applicant's After-Final Amendment of April 12, 2007, had not been entered. Accordingly, all amendments to the claims and specification submitted herein are made with respect to the claims and specification as of the last-entered amendment, dated October 30, 2006.

On the merits, the Examiner rejected the subject matter of each of Claims 1, 3 – 6, 9 – 12, 14, and 16 – 20 as allegedly anticipated by U.S. Patent No. 5,352,276 to Rentschler et al. ("Rentschler"). In addition, the subject matter of each of Claims 1, 3 – 12, 14, and 16 – 33 was rejected as allegedly obvious over the Rentschler patent taken in combination with a series of alleged prior art "admissions" in Applicants' specification. The subject matter of each of Claims 1, 3 – 12, 14, and 16 – 33 was also rejected as allegedly obvious over the Rentschler patent taken in combination with the Cheng patent, and optionally, the alleged prior art "admissions." Finally, the Examiner raised a series of objections to the drawings.

Each of the foregoing rejections is respectfully traversed and favorable reconsideration is requested in view of the above amendments and following remarks.

I. The Prior Art Rejections.

Turning first to the anticipation rejections based upon the Rentschler patent, independent Claims 1, 12, and 21 each call for a venturi-type inline stripper unit used to strip dissolved VOC's from the liquid part of a two-phase flow extract drawn up to adjacent the surface using a well. The groundwater is contaminated by VOC's dissolved in the liquid part of the two-phase flow extract. The venturi stripper is effective in stripping the VOC's from the liquid phase these VOC's are passed into the gaseous phase.

Rentschler is a different type of system which uses entirely different technology. Rentschler describes a conventional groundwater remediation system in which contaminated groundwater is stripped of contaminants by a countercurrent flow of air up through the water while it flows down through air-permeable trays of a "stripper column." This is the type of system Applicants' invention is intended to improve upon.

Rentschler does not use a venturi-type inline stripper for remediation of a two-phase flow of groundwater extract, and no structure used by Rentschler is even remotely similar to a venturi stripper. Rentschler plainly does not anticipate or allude in any way whatsoever to a high-power, dynamic flow regime along the lines of the venturi separation technology called for Applicants' claims. The anticipation rejection based on Rentschler must be withdrawn.

As for the obviousness rejections based upon hypothetical combinations of (1) Cheng and the alleged prior art admissions in Applicants' specification and (2) Rentschler together with Cheng patent and, optionally, the alleged admissions, it is respectfully submitted that none of these remotely suggests the invention as called for in independent Claims 1, 12, and 21. No person of ordinary skill would find it obvious to fashion Applicants' claimed system from these or any other known combinations of prior art references.

The alleged admissions of prior art cited by the Examiner state no more than that it is known to transport contaminated groundwater up to the surface using various well systems for above-ground treatment, on the one hand, and that it is known to use a knockout or similar vessel after a stripper to allow for more facile separation of gas

and liquid phase process streams, on the other hand. Thus, the so-called admissions conceded nothing more than what is already apparent in, for instance, the Rentschler patent. Neither the alleged admissions, nor the Rentschler patent, nor any other reference cited by the Examiner discloses or suggests the use of a venturi-type inline stripper to remove VOC's from the liquid phase of a two-phase flow of contaminated groundwater extract brought to the surface for treatment according to Applicants' claimed invention.

The Examiner attempts to fill these gaps in the teaching of the prior art by citation to the Cheng patent. While Cheng does speak of some form of a venturi stripper, Applicant does not claim to have invented the use of a venturi stripper per se to help separate gas from a liquid. Cheng discloses a special application of venturi stripping technology to remove dissolved oxygen gas from liquid water and vegetable oils. Cheng says nothing about stripping VOC contaminants such as MtBE, benzene, toluene, and the like from a two-phase flow of contaminated groundwater drawn up from below the surface of the earth.

The mere fact that Cheng discloses the use of a venturi stripper to remove oxygen gas from water would not have led one of ordinary skill in the art to use that the same approach to remove VOC contaminants from the liquid part of a two-phase flow of groundwater. Stripping is of course a well-known process of removing gases from a liquid coming up from a subterranean location. Again, Applicants do not claim to have invented the idea of stripping gases from liquids using a venturi. But determining the feasibility of separating dissolved gas from a liquid in a particular two-phase gas/liquid system is not necessarily a simple or straightforward matter in execution, and in many situations a stripping approach would might never even be considered or would be quickly dismissed as "infeasible" due to the nature of the materials involved, their relative "volatility," and other factors. Applicants' invention is one such system.

As can be seen from the following table, in terms of its boiling point, oxygen gas (as discussed in Cheng) substantially is more volatile than the so-called "volatile" organics typically encountered in contaminated groundwater.

Normal Boiling Points

(taken from *Condensed Chemical Dictionary*, 11th Ed)

<u>Material</u>	<u>Normal Boiling Point</u>
MtBE	55 °C
Benzene	80.1 °C
Toluene	110.7 °C
Oxygen (O ₂)	-183 °C
Water	100 °C

Accordingly, the Cheng reference could be said to represent an expected use of a venturi-type stripper to separate dissolved oxygen gas from water because oxygen gas is readily liberated from water. The difference in boiling points between oxygen gas and water is over 280 °C. This profound difference in volatility would indicate that this is a relatively “easy” separation, and that the oxygen would literally “jump” out of the water or oil when encouraged to do so by the conditions of a venturi. Not so with the dissolved groundwater VOC’s.

In stark contrast to oxygen, the VOC’s of the type encountered in contaminated groundwater typically have boiling points which are much closer to that of water itself. Since there is considerably less difference in relative volatility, one of ordinary skill would not be oriented toward use of a system like that described by Cheng for dealing with VOC’s captured in groundwater, and would have no reason or incentive to expect that such an apparently difficult separation could be achieved with a venturi-type stripper simply because a much easier separation of oxygen from water or oil could be carried out using a venturi stripper.

Further still, nothing in the cited art would have prompted one of ordinary skill to combine Cheng’s venturi stripper with the remaining cited art. As the Supreme Court has recently explained,

a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building

blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

KSR Intern. Co. v. Teleflex Inc., 127 S.Ct. 1727, 1741 (2007). Thus, in the words of the Federal Circuit,

“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”

See In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006) (Cited with approval in *KSR*).

Such reasoning is lacking in the present case and consequently, the cited assemblage of references cannot reasonably be said to render the subject matter of Claims 1, 12, or 21 (or their dependent claims) obvious. Nothing in the art or alleged “admissions” would have suggested the feasibility of liberating groundwater-bound VOC’s from a two-phase flow of subterranean groundwater and air/vapors using a venturi-typed separator. This is not an obvious approach for achieving such a separation, and the obviousness rejections cannot reasonably be maintained. Applicants urge the Examiner to withdraw them all and to allow all pending claims.

II. The Drawing Objections.

The Examiner also raised several issues with respect to the drawings. First, the Examiner requested that Fig. 3 be labeled as “Prior Art.” The requested label has been added to the replacement sheet submitted herewith. However, it is noted that Fig. 3 figure discloses “prior art” only in the sense that the air amplifier device disclosed therein was known prior to the Applicants’ invention. The use of such a device for the stripping of VOC’s from contaminated groundwater is entirely new and is not prior art.

Next, the Examiner indicated that the proposed changes to Fig. 1 (which were submitted in Applicants’ April 12, 2007, amendment) were approved. Since, however, the April 12, 2007, amendment was not entered by the Examiner, the changes to Fig. 1 are being resubmitted in this amendment, along with corresponding amendments to the text of the specification to add reference numbers 70, 72, and 74..

As for Fig. 2, the Examiner indicated that the proposed drawing changes submitted with Applicant's April 12, 2007, amendment were not approved. In the April amendment, Applicants had removed the cross hatching from Fig. 2 in response to the Examiner's earlier comments. The Examiner now indicates that deletion of the cross hatching makes the drawing more difficult to understand. Accordingly the cross hatching is restored in the currently proposed drawings.

In addition, arrows and reference numbers 68 and 80 have been added to indicate both the flow of extract and the flow of compressed air as requested by the Examiner.

Finally, with regard to Fig. 4, the Examiner requested clarification as to whether or not the extraction well depicted in Fig. 4 was a depiction of the prior art. In response, Applicants submit that similar extraction wells were known in the prior art; however, Applicants are not aware of any use of such extraction wells in conjunction with a venturi stripper as presently claimed.

In light of the foregoing, Applicants urge the Examiner to reconsider the application, to withdraw the rejections, and to issue a notice of allowance at the earliest possible convenience.

In the event this response is not timely filed, Applicants hereby petition for the appropriate extension of time and request that the fee for the extension along with any other fees which may be due with respect to this paper be charged to our **Deposit Account No. 12-2355**.

Respectfully submitted,

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MSG:JDG:lkd
Enclosure: Red-lined Drawings
Formal Drawings

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